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| 10/033,328 | 11/02/2001 | Darrin M. Patek | 1000-P02158US | 9602 |

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| EXAMINER | |
|---|---|
| STRANGE, AARON N | |
| ART UNIT | PAPER NUMBER |
| 2153 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/033,328 | PATEK ET AL. | |
| | Examiner | Art Unit | |
| | Aaron Strange | 2153 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01232007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 1/23/2007 have been fully considered but they are not persuasive.

2. With regard to claim 1, and Applicant's assertion that Chin does not disclose "wherein said data item is concurrently transferred from said source to said selected destinations based on said routing control values", (Page 8 of Remarks), the Examiner respectfully disagrees.

As an initial matter, based on Applicant's statement that "Chin does not disclose concurrently forwarding the *packets* to the destination endpoints" (Page 8 of Remarks), it appears that Applicant may be confusing sequential processing of packets with sequential transferal of a single multicast packet to multiple destinations.

In Chin, as in most routers, packets are sequentially processed in the order they are received, and unicast packets are forwarded to a single destination. However, multicast packets are concurrently forwarded to multiple destinations based on the routing control values (packet is forwarded toward each destination based on the port of exit mask) (at least Fig 4 and Col 18, Lines 9-22).

3. With regard to claim 14, and Applicant's assertion that Chin fails to disclose "copying said data to said plurality of output queues" (Page 9 of Remarks), the Examiner respectfully disagrees. Copying the data to an output queue controller is an

inherent part of forwarding the data to a particular location. The data is sent to the transaction controller of each destination port, where the header is prepended and the packet is transmitted (at least Col 13, Lines 1-13).

4. With regard to claim 8, and Applicant's assertion that Nolan fails to teach "wherein the reference to said frame is concurrently transferred to at least two selected output queue controllers in accordance with said mask" (Page 11 of Remarks), it is noted that this limitation is substantially taught by Chin, as discussed above. Nolan was cited only to teach loading and unloading of output queues by reference through the use of pointers. The combination of Chin and Nolan teaches all limitations of claim 8. Applicant is reminded that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

5. Applicant's remaining arguments merely incorporate the arguments already addressed above. Therefore, they are unpersuasive for at least the reasons discussed above.

6. Based on Applicant's specification, it appears that Applicant may have intended to impart special meaning to the term "concurrently", since the specification asserts that the "present invention provides a method and system for scheduling of multicast

packets of frames in a switching network" (¶6) and is intended to overcome problems with conventional multicasting such as contention and dealing with variable sized packets (¶4).

However, concurrently is not defined in the specification or the claims, and the claims contain no limitations that specify how the present invention solves problems related to contention or variable sized packets. The Examiner recommends amending the claims to include limitations directed to that subject mater, since they may potentially place the application in condition for allowance.

The Examiner would be willing to discuss any potential amendments in an interview. If Applicant feels that an interview would expedite prosecution of the present application, he/she is encouraged to contact the Examiner to schedule one.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-7,14,16,18,31 and 25 rejected under 35 U.S.C. 102(b) as being anticipated by Chin et al. (US 5,617,421).

9. With regard to claim 1, Chin discloses a method for sending a data item from a source to selected destinations of a plurality of destinations in a switching network, said method comprising:

examining said data item to determine a routing identifier (source address) for said data item (at least Col 18, Lines 1-12);

using said routing identifier as an index, accessing a data structure (Table 4) comprising routing control values for said plurality of destinations (at least Col 18, Lines 10-12); and

transferring said data item from said source to said selected destinations based on said routing control values, wherein said data item is concurrently transferred from said source to said selected destinations based on said routing control values (at least Col 18, Lines 20-22).

10. With regard to claim 2, Chin further discloses that said data structure comprises a table (Table 4).

11. With regard to claim 3, Chin further discloses that said table comprises predetermined routing information (port masks)(Table 4).

12. With regard to claim 4, Chin further discloses that said data item comprises a portion of a frame (at least Col 18, Lines 20-22).

13. With regard to claim 5, Chin further discloses that said routing control values is part of a mask (Port of exit mask)(Table 4).

14. With regard to claim 6, Chin further discloses that said source comprises an input queue (queue at port of entry)(at least Col 18, Lines 1-3).

15. With regard to claim 7, Chin further discloses that said switching network is part of a router (data is forwarded to appropriate ports in the switch)(a least Col 18, Lines 1-22).

16. Claims 14 and 25 are rejected under the same rationale as claim 1, since they recite substantially identical subject matter. Any differences between the claims do not result in patentably distinct claims and all of the limitations are taught by the above cited art.

17. With regard to claim 16, Chin further discloses that said frame has a frame format comprising a type (at least Col 6, Lines 42-53), a destination ID (at least Col 18, Lines 1-3), and data (at least Col 6, Lines 42-53) (Ethernet frames contain all of these fields).

18. With regard to claim 18, Chin further discloses that said frame has a frame format comprising a type (at least Col 6, Lines 42-53), a route (destination address)(at least Col 18, Lines 1-3), and data (at least Col 6, Lines 42-53).

19. With regard to claim 21, Chin further discloses that said memory for storing said mask includes a lockable row (it is well-known that table entries may be set as read-only)(Table 4 and Col 12, Lines 28-31).

***Claim Rejections - 35 USC § 103***

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

21. Claims 8-13,15 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (US 5,617,421) in view of Nolan (US 6,661,790).

22. With regard to claim 8, while the system disclosed by Chin shows substantial features of the claimed invention (discussed above with regard to claim 1), it fails to disclose transferring the frame by reference to the output queues.

Nolan discloses a similar system for multicasting data in a network. Nolan

discloses that loading and unloading of transmit and receive queues by reference through the use of pointers is old and well known (at least Col 3, lines 22-27). Transferring data by reference is notoriously well known in the networking arts and allows data to be forwarded without being copied multiple times and reduces the time needed to transmit the data.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to load/unload the transmit and receive queues by using pointers as references to the data to be transmitted, since it reduces the time needed to forward data by reducing the amount of times it must be copied.

23. With regard to claim 9, Chin further discloses copying a word associated with said frame to selected output queues corresponding to said selected output queue controllers (at least Col 18, Lines 20-22).

24. With regard to claim 10, Chin further discloses that said data structure comprises a table, said table comprising said mask (Table 4).

25. With regard to claim 11, Chin further discloses that said destination identifier is an index into said table for selecting said mask (at least Table 4 and Col 18, Lines 10-12).

26. With regard to claim 12, Nolan further discloses that said frame is stored in shared memory and is located by reference to said frame (at least Col 3, Lines 22-27).

27. With regard to claim 13, Nolan further discloses that said reference to said frame includes a pointer to said frame (at least Col 3, Lines 22-27).

28. Claims 15 and 22 are rejected under the same rationale as claim 8, since they recite substantially identical subject matter. Any differences between the claims do not result in patentably distinct claims and all of the limitations are taught by the above cited art.

29. With regard to claim 23, Chin further discloses that transferring said frame to a plurality of selected output ports happens in parallel (at least Col 18, Lines 20-22).

30. With regard to claim 24, Chin further discloses that said control unit comprises a lockable cache memory for storing a mask, said mask used in selecting said plurality of selected output ports (it is well-known that table entries may be set as read-only)(Table 4 and Col 12, Lines 28-31).

31. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (US 6,661,790) in view of RFC 1349.

32. With regard to claim 17, while the system disclosed by Chin shows substantial features of the claimed invention (discussed above), including that said frame has a frame format comprising a type (at least Col 6, Lines 42-53) and a route (destination address)(at least Col 18, Lines 1-3), it fails to disclose that the frame comprises user defined control information.

RFC 1349 teaches including user defined control information in a packet header (at least Pages 5-6). This allows the user to specify control information that routers may use to handle the packet. This would have been an advantageous addition to the system disclosed by Chin, and would have been present whenever IP packets were being routed, since it allows the user to have some control over the routing process, by requesting that the routers minimize delay or cost, maximize throughput or reliability, or specify normal service. This would be especially useful in assisting the routers in their intelligent path selection (Chin, Col 18, Lines 46-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use user defined control information to specify how the router should handle particular packets.

33. Claims 19 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (US 6,661,790) in view of Flanders et al. (US 6,172,980).

34. With regard to claims 19 and 20, while the system disclosed by Chin shows substantial features of the claimed invention (discussed above), it fails to disclose that said route comprises a multicast flow ID of a unicast destination port ID.

Flanders teaches providing a multicast flow ID and/or a unicast destination port ID in a packet (at least Col 6, Line 49 to Col 7, Line 4). Including these fields allows appropriate packets associated with flows to be looked up in a flow cache table to be assigned QoS parameters, ensuring that the packets are properly routed to maintain the QoS for the entire flow.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multicast flow ID and/or unicast destination port ID's to associate appropriate packets with flows to maintain QoS if the packet is associated with a flow.

***Conclusion***

35. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Strange whose telephone number is 571-272-3959. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AS
4/5/07

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